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ASSESSMENT REPORT 1978, PROJECT 71-86, GAYOT LAKE, PERMIT AREAS

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ASSESSMENT REPORT 1978
PROJECT 71-86 GAYOT LAKE
PERMIT AREAS

Prepared by:

Rodney G. Orr,
UEM Montreal

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1. INTRODUCTION

1.1 AREA OF INVESTIGATION

Work was carried out during the 1978 field season within five permit areas held by U.E.M., covering all or portions of four outliers of Aphebian (?) aged Sakami Formation sediments. These rocks occur as a discontinuous belt within the Superior geological province of northcentral Québec.

1.2 PURPOSE OF INVESTIGATION

To examine each of the four known Sakami outliers for possible uranium mineralization.

1.3 TIME OF INVESTIGATION

Exploration work began on July 3rd and was terminated on August 31st.

1.4 PERSONNEL

B. Starke	Manager Exploration, Eastern Canada
R. Lambert	Chief Geologist
R. Orr	Project Geologist
M. Leppin	Geophysicist
R. Bélair	Acting Project Geologist (15/08-27/08), P.E. 634
M. Beaulieu	Sr. Assistant
E. Canova	Sr. Assistant
J.M. Cormier	Jr. Assistant
B. Kam	Jr. Assistant (21/07-27/08)
J. Kaylor	Jr. Assistant (21/07-27/08)
L. McKinnon	Cook's Helper
W. McKinnon	Cook - Camp Mgr.
L.D.S. Winter	Geologist (3/07-27/08)
S. Rivard	Technician
F. Ballotta	Jr. Assistant (15/08-27/08) P.E. 634
H. Coonishish	Prospector (15/08-27/08) P.E. 634
C. Lavergne	Jr. Assistant (15/08-27/08) P.E. 634
H. LeMouel	Sr. Assistant (15/08-27/08) P.E. 634
A. Matoush	Prospector (15/08-27/08) P.E. 634
K. Papasoff	Sr. Assistant (15/08-27/08) P.E. 634
J. McCormick	Pilot-Engineer (Viking Helicopters Ltd.)

1.5 INSTRUMENTS, VEHICLES USED

1.5.1 Instruments

1 EDA RD 200 Portable Radon Detector
12 SRAT SPP2NF Scintillometers
1 Geonics EM16R
1 Scintrex GAD 6 Differential Gamma-Ray Spectrometer
1 Scintrex GAM 2S Differential Gamma-Ray Spectrometer

1.5.2 Vehicles - Aircraft - Airterm Charter

Helicopter

Type:	Hughes 500C - float and ski equipped
Operator:	Viking Helicopters Ltd.
Base:	Ottawa, Ontario (field base: Dieter Lake)
Length of Contract:	219 hours @ $240/hr.
Primary function:	Drill support, personnel transportation, geochemistry

TABLE 1 - BREAKDOWN OF AIRCRAFT FUNCTIONS - PERMIT AREAS

Period	Total Hours	Function (hours per)
1/07-31/07	60:20	Lake bottom sampling (19:45); transport of personnel (30:55), fuel cacheing (2:20); airborne geology (7:20)
1/08-30/08	51:50	Transport of personnel (36:45); airborne geology(14:05); camp servicing (1:00)

2. GENERAL INFORMATION

2.1 LOCALITY

Dieter Lake (site of the base camp) is 274 km northwest of Schefferville, Québec; the coordinates being Lat. 55°58'15"N, Long. 70°36'30"W.

2.2 COMMUNICATIONS AND ACCESS

2.2.1 Communications

A single sideband radio transceiver, Model CH100, was rented from the Canadian Marconi Company. Radio communication between Dieter Lake and Schefferville are possible through Laurentian Air Services, and to Montreal via the Bell Canada radiotelephone stations at Alma, Québec, and Frobisher Bay, N.W.T.

2.2.2 Access

Dieter Lake is a 1.5 hour flight from both Schefferville and Fort Chimo using float-equipped aircraft.

2.3 TOPOGRAPHY

The topography in the vicinity of Dieter Lake is moderately rolling, with the elevation varying from 450 to 550 meters above sea level. Much of the area shows evidences of glacial activity, and glacio-fluvial deposits constitute many of the topographic features. As such, drainage patterns are typically deranged, and several large areas of lakes are controlled by ribbed moraine. Many areas are strewn with erratics and deposits of hummocky moraine. Several eskers can be traced for tens of kilometers.

2.4 CLIMATE

The climate may be classified as subarctic to continental. Mean temperature during the May-September period is 10°C, while the mean annual temperature is 0°C. Mean rainfall during the May-September period is 450 mm. The average daily maximum temperature during July is 18°C. The clearest weather usually occurs in April and May, prior to break-up. The snow has usually gone by early June and the ice is off the lakes by the third week of the same month.

2.5 VEGETATION

This area lies in the transition zone between subarctic and tundra, resulting in a pattern of tundra barrens and limited areas of stunted open forest. The forest cover is found along the shores of lakes and

rivers, while the tundra is on the highland. Black spruce (Picea Mariana) and tamarack (Larix Laricina) make up the greater part of the forest growth. Neither travel nor camp set-up is hampered by the vegetation, and trees of sufficient size can usually be found for camp construction.

2.6 POPULATION AND LAND USE

Neither settlements nor commercial land exploitation occur within the area of investigation.

2.7 WATER RESOURCES

Numerous lakes provide water for drinking and access. Drainage is to the north, with the major rivers flowing into Hudson and Ungava Bays.

2.8 MAGNETIC DECLINATION

At Dieter Lake it is 29°12'W (1978), with a mean annual change of 6.2' easterly.

3. PREVIOUS SURVEYS AND ACTIVITIES

3.1 TOPOGRAPHIC MAPPING

The following N.T.S. map-sheets, at a scale of 1:250,000 published by the Surveys and Mapping Branch of the Department of Energy, Mines and Resources, encompass the project area (lat. 55°30'N to 56°20'N, long. 69°00'W to 74°00'W):

23 M,N
33 P
34 A
24 C, D

The following list of airphotos obtained from the National Air Photo Library cover the area delimited by the above coordinates:

A14094	20-54	1:43200
A14154	1-125	"
A14175	5-28	"
A14158	87-176	"
A14141	2-93	"
A16599	80-149	1:43000
A14318	36-123	1:43200
A14351	39-118	1:43000
A14350	12-102; 125-165	1:43200
A15634	13-62; 70-199	"
A15341	1-75; 162-216	1:42000
A11442	1-27	1:34680
A11493	79-102; 153-158	"
A11498	49-63	"
A15615	1-83	1:42000
A11501	39-55	1:34680
A15715	25-122	1:42000
A15813	1-33; 43-27	"
A11482	79-103	1:33680
A11504	1-9	1:34680
A12081	74-88	1:34680
A11550	49-75	"
A11428	28-53; 56-74 163-178	"
A11437	150-160	"

Uncontrolled airphoto mosaics at 1:50,000 may be obtained from the National Air Photo Library. The list for the area of interest is as follows:

N.T.S. Reference	Mosaic Number
23N northwest	RE 11164-30
23M northeast	RE 11164-29
23M northwest	RE 11164-23
33P northeast	RE 11164-25
33P northwest	RE 11164-7
34A southwest	RE 10742-8
34A southwest	RE 10742-7
24D southwest	RE 10742-2
24D southeast	RE 10742-12
24C southwest	RE 10701-1, 2, 3

3.2 GEOLOGICAL MAPPING

Portions of the project area fall within the areas mapped by K.E. Eade (1966) (G.S.C. Memoir 339) at a scale of 1:1,000,000, by I.M. Stevenson (1968) at 1:1,000,000 (G.S.C. Memoir 356), and by W.F. Fahrig (1955) at 1:253,440 (G.S.C. Paper 55-42).

3.3 GEOPHYSICAL SURVEYS

The region bounded by lat. 55°33'N-56°00N, long. 70°00'W-71°00'W is covered by an aeromagnetic map at a scale of 1:253,440, published jointly by the Ministère des Richesses Naturelles du Québec and the Canadian Department of Energy, Mines and Resources.

An exploration program was initiated during the 1977 field season in the Gayot and Mildred Lakes by Eldorado Nuclear Ltd. This program continued during 1978 with its efforts apparently concentrated along the western strike extension of the Dieter Lake showing. Drilling was to commence in early September, west of Dieter Lake.

4. EXPLORATION PERMITS

4.1 PERMITS APPLIED FOR

A permit (26 mi^2) was requested during the month of September for an area immediately adjoining upon the U.E.M. permit at Lac Gerzine (P.E. 634).

4.2 CONCESSIONS GRANTED

Permit No.	Locale	Date Granted	Term	Area
626	Mildred Lake	June 22, 1977	3 years	303 km^2
627	Dieter Lake N	June 22, 1977	3 years	67.3 km^2
628	Dieter Lake S	June 22, 1977	3 years	67.3 km^2
634	Lac Gerzine	Nov. 23, 1977	3 years	388.5 km^2
635	Lac Pons	Nov. 23, 1977	3 years	93 km^2
650	Lac Gerzine W	Sept.18, 1978	3 years	67.3 km^2

5. GENERAL GEOLOGY

The Sakami Formation outliers of northcentral Quebec lie in the northeast arm of the Superior Structural Province. As such, all of the rocks within the area of interest are Precambrian in age. The oldest rocks of the region are the Archean volcanics and sediments, which were folded, faulted, metamorphosed, and intruded by granites during the Kenoran Orogeny of 2480 Ma ago. The Sakami sediments are Proterozoic and are tentatively classified as being Aphebian (Eade, 1966).

It was because of these sedimentary rocks and their temporal relationship with the surrounding older terrain that attracted exploration companies to the area. The Sakami rocks outcrop as discontinuous erosional remnants stretching across northern Québec in two east-west belts. As a group, they bear certain affinities to those sediments found in the Otish basin, the Labrador Trough and Richmond Gulf, and it has been suggested that all were once part of single widespread sedimentary cover (Chown et al. 1977). The age of the Sakami relative to these other assemblages is unknown.

Of the two belts of Sakami sediments, it is the northernmost one with which we are dealing. Prior to the 1977 field season, only two outliers were known of, Gayot Lake and Little Whale River (Mildred Lake) (Eade, 1966); but as a consequence of the regional mapping program carried out by U.E.M., a third and fourth were discovered. These are to the east and northeast of Dieter Lake, 40 and 60 km away respectively. Mapping carried out within these outliers shows them to have essentially the same characteristics as are known for Dieter Lake.

The correlation between the sedimentary units for each of the areas mapped - and this applies to all of the Sakami in general - is very good. After a study of the Sakami in both northern and southern belts, Eade (1966) subdivided the formation into an upper and a lower part. Within the area of interest, the upper units are comprised of a single lithology, this being a quartz arenite; while the lower consist of an assemblage of conglomerates, shales, wackes, siltstones, and arkosic arenites.

The Sakami unconformably overlie quartz-felspathic gneisses, granites, and pegmatites. In some instances a fault separates the sediments from the basement, but it is believed that these faults originally formed the structure into which the sediments were deposited and were reactivated afterwards.

5.1 PETROLOGY, LITHOLOGY, STRATIGRAPHY

5.1.1 P.E. 626 Mildred Lake

Nearly a complete sequence of Sakami sediments was noted within the map area, but due to the fact that much of this section of the permit is covered by lakes, an accurate picture of the stratigraphy cannot be presented (Map 2). Outcrops of basal congolmerate were seen in two locales along the southern part of the outlier. It contains poorly sorted granite cobbles, is generally pink in colour, and contain some interbeds of a medium to coarse-grained sandstone. A reddish

siltstone overlies the basal unit, but only one outcropping was seen, which would imply rapid lateral facies changes. The third unit is a conglomeratic arkosic sandstone. This unit probably bears a relationship to the lower conglomerate, but would be slightly further removed from their source. A thick sequence of well bedded, fluvial sandstones was mapped in the central part of the area. Seen as interbeds within the quartz sandstones are some arkosic sandstones, some thin dolomitic horizons, and a unit of red, well laminated siltstone.

Stratigraphy within the mapped area is difficult due to complications introduced by faulting, and the lack continuity introduced by the abundance of lakes and rivers. Bedding trends are generally east-west with dips ranging from 18° to 40°S, while dips of 50°S to vertical were seen close to a contact with the basement. This contact falls within the Little Whale River, and is likely to be a fault. The main set of fault strikes are to the east-northeast; a second set being essentially east-west.

5.1.2 P.E. 627 Dieter Lake North

Of the sixty-five km^2 which make up this permit, only 3.75 km^2 or just under 6% of it is underlain by Sakami sediments (Map 3). Two units are represented: a conglomeratic, arkosic sandstone, and a quartz sandstone. A single outcropping of the conglomerate was found, this being on the point extending from southern shore of Joker Lake. Dips show this rock to be the lowermost present, but as the lake separates the outcrop from the closest granites, possibly other units may exist below it. The rock consists of quartz and feldspar pebbles of 3 to 30 mm in size, set within a medium to coarse-grained sandy matrix. Sorting is poor, but some laminations and graded bedding are visible. A small amount of sandstone intraclasts were noticed.

Two outcrops of a quartz sandstone were mapped within the area. It is a medium to fine-grained rock, and contains some thin beds which are coarse to pebbly. The amount of feldspar contained is quite variable and at times the unit may be termed a subarkose. Structures seen, consisted of bedding and some crossbedding.

The rocks close to the Archean/Proterozoic contact strike to the east, and dip 22° south, while to the south of this they strike northeastly, and dip 26° south. Abundant jointing was noticed, but faulting was not seen.

5.1.3 P.E. 628 Dieter Lake South

This permit is shaped so as to include two areas along the southern edge of the Gayot Lake Sakami outlier (Map 3). These areas are separated by ca. 3 km, the intervening ground being held by a competitor. Correlation between them is reasonably good, notwithstanding differences due to structural deformation. The primary dissimilarity is the nature of the contact, it having been mapped as a fault in the west and a nonconformity in the east. Because of this difference, at both sites the lowermost unit encountered reflects a particular environment of deposition. Both are essentially arkosic sandstones, but that in the west is described as being conglomeratic, whereas that of the east, finegrained, but not without some pebbly interbeds. Other characteristics of the western examples are brecciation and quartz veining, both a result of faulting which is interpreted as having been active both in pre- and post-depositional times. The faulting has made it impossible to determine any sedimentary structures within this unit.

The succeeding lithology was seen in only one outcrop and is placed within the sequence through correlations with Dieter Lake. A red wacke was mapped in the western part of the permit, it being in fault contact with the units to the north and south, and because of this is is thought to be an uplifted block. It is described as being massive, containing coarse, subrounded and feldspar within a fine matrix of the same minerals. Quartz beins cut the rock.

A quartz sandstone follows, and is the most abundant unit found. It is fine to medium-grained with coarse interbeds, in which a greater amount of feldspar was present. It is thickly bedded and in places displays crossbedding.

This sandstone has been intruded by a diorite which was interpreted as being in the form of a dyke, but which may in fact be a sill. In the west it occurs in two separate areas, but at a similar distance from the contact; whereas in the east it appears with sufficient regularity so as to be traceable over the length of the area, again at a uniform distance from the contact.

5.1.4 P.E. 634 Lac Gerzine

A preliminary mapping program was carried out within this outlier over a period of eight days, a combination of ground traverses and helicopter spot checking having been used. During this time it was the intention that the extent and contacts of the outlier be outlined, and that the geology and uraniferous potential be examined (Map 7).

The sediments of the outlier generally trend east-northeasterly and have moderate dips to the south. The nature of the contact with the surrounding Archean basement is uncertain, but may be faulted in the north, while the souther is in unconformity. Correlation between these rocks and those of the other Sakami outliers appears to be possible, and a preliminary stratigraphic section is below. The lower Sakami units have to date been observed in the western part of the outlier, and in places these overlie a regolith. The upper Sakami is much more prevalent and most of the known outcrop are sandstone and quartzites from this memeber. For the most part, metamorphism of the sediments is mineral, as is the case elsewhere in the Sakami, but locally, some lower greenschist facies effects (chloritization-sericitization) were seen.

TABLE 2 - STRATIGRAPHIC SECTION

Proterozoic	Upper	- Pink to brick red quartzites and sandstones
		- White quartzitic sandstone, feldspathic sandstones, conglomerate (interval)
		- Red shale and red ferrugineous sandstone
	Sakami	- White felspathic mature sandstone (conglomeratic intervals)
	Lower	- White sandstones, minor shale, microconglomerate
		- Red and green wackes?? - mudstones, stilstones
	Sakami	- Basal conglomerate, conglomerate ?Regolithization (local)??
		---------- Unconformity ----------
Archean		- Foliated white to pink leucocratic granites, melanocratic embayments, granodiorite, gabbros?, pegmatite veins.

5.1.5 P.E. 635 Lac Pons

This outlier of Sakami Formation rocks is contained entirely by this permit, and in fact much of it is covered by the waters of Lac Pons (Map 10). The sedimentary sequence is not unlike that found in the other permits - a basal conglomerate overlain by arkosic and quartz sandstones. It is the adjacent granitic rocks which set this area apart.

The southern contact is well exposed at the tip of the peninsula which projects downward in the southwest part of Lac Pons. A zone of regolith was seen at this contact, separating fresh granites from a quartz sandstone. It has an approximate true thickness of 5m. The rocks appears as a transitional species between the granite and sandstone, having characteristics of both; such as a composition of the former and the texture and form of the latter. A curiosity noted was the inclusion of large (30-40 cm), well rounded, unweathered granite boulders within the transitional material. These boulders showed a positive relief relative to the surrounding matrix of medium-grained quartz, feldspar and fine clay minerals. The usage of the term boulders in this context is not meant to imply a genetic, i.e. transported, connotation. The origin of this regolithic material is uncertain, evidence of either a residual or transported nature not having been observed. It is believed that a residual origin would best explain its existence however.

A basal conglomerate was mapped on several of the small islands in the south of Lac Pons, but not at the contact mentioned in the preceeding paragraph, where a coarse-grained arkosic sandstone was present. The basal conglomerate was characterized by massive bedding, angular to subangular phenoclasts of feldspar, quartz and granite cobbles up to 15 cm in size within a medium to coarse-grained arkosic sandstone matrix. Some gross bedding features were noticed within this paraconglomerate and a grading of the phenoclast sizes can be determined.

The coarse arkosic sandstone was also mapped on the islands in the south of the lake, it overlying the basal unit. This and the lower conglomerate were not found to outcrop on the eastern shore of the lake, along strike from the islands. At both locales where it is seen, the rock is noticeable by its contents of medium to coarse-grained, subrounded feldspar and quartz, and in the islands for the presence of mudstone and granite clasts.

The most widespread lithology mapped within this outlier is the sandstone. It is similar to that seen in the other areas, save for the presence of mudstone interbeds in one locale. The sandstone is feldspathic in part.

Attitudes noted within the sandstones measured around Lac Pons would indicate that the sediments were deposited into a small (present size ca. 3 x 10 km) basinal structure which was able to escape subsequent erosion. Much of the contact with the Archean basement is masked, but the type of contact can be inferred in two areas. In the south of Lac Pons, at the site of the regolith previously mentioned, the contact is a nonconformity, the sediments resting upon the regolith and granites.

In the northeast of the outlier, the contact is below overburden and a swamp, but can be inferred to fall within a minor topographic depression. Possibly this depression is the surface expression of a fault, but this is not confirmed by other evidence. In general the area is little deformed by folding or faulting. One fault offsets the outlier boundary at its south end by 500 m.

5.2 STRUCTURE AND TECTONICS

5.2.1 Permit 626 Mildred Lake

Many details concerning the structural geology of this map area remain to be discovered, but the initial view is that of an area whose geology is strongly controlled by faulting (Map 2). As the map area covers but a small portion of the outlier, reference is made to Eade (1966) for a generalized view. In brief, his interpretation saw the sediments to generally be in fault contact with the Archean, and unconformable contacts to be the exception. He noted that the sequence was disturbed by several faults, which caused problems when attempting to unravel the stratigraphy. Eade placed faults at both the northern and southern boundaries of the outlier, and in fact, a steep northfacing scarp is quite obvious at the southern edge.

Within the map area (which is actually a western extension of the rocks mapped by Eade) the southern contact is below the waters of the Little Whale River, which is interpreted as being a fault depression. The northern contact was never seen and can only be assumed to be within the large lake which covers much of the north of the map area. Faulting within the interior of the outlier has resulted in the placing of an inlier of granitic rocks, with the consequence that certain sedimentary units were truncated, and the sequence disrupted where the sediments are not tectonically displaced, they have dips of 18° to 40°S and trend easterly; while in the vicinity of faulting they may be at or near vertical.

5.2.2 P.E. 627 Dieter Lake North

Significant evidence of disruption within the sediments was not seen due in part to the small size of the area (Map 3). It would be safe to assume that the same forces which were involved in the Dieter Lake area were also at work here.

5.2.3 P.E. 628 Dieter Lake South

Again, the small area does not allow much room for large structural features (Map 3). Of importance is the large fault which separates the younger sediments from the basement in the western half of this permit. It is characterized by a small east-west trending valley, which can be traced beyond the permit for nearly eight km. Within the eastern part of the permit are two northeasterly trending faults which transect the contact, but which have little lateral displacement.

5.2.4 P.E. 635 Lac Pons

On the basis of the relatively small amount of this permit which is underlain by Sakami and which is accessible, it appears quite uncomplicated (Map 10). A fault, which can be traced from outside of the permit, cuts the margin of outlier at its southernmost point, offesetting the contact by 500 m. It is proposed that this fault is expressed also as the western shore of Lac Pons, but the only evidence for this is the fact that the northward projection of this fault would place it there.

6. PROSPECTIVE TARGETS AND AREAS

All indications obtained with P.E. 634 Lac Gerzine show this outlier to be a strong target area. Mapping/prospecting has resulted in the locating of four radioactive outcroppings, and geochemical and airborne radiometric surveys confirm the area as having uranium potential.

The outcroppings are well within units of the lower Sakami member, and while visible mineralization has not been seen, radioactivity indicates of small amounts of very-finegrained disseminated mineralization.

The Lac Pons area (P.E. 635) was also shown this year to have reason fo further exploration with the discovery of minor uranium mineralization in fractures within a hematized granite, situated within 50 m of the northern Archean/Proterozoic boundary. It is unknown if the contact

and adjacent sediments are mineralized however, because of virtually complete cover by overburden, but geochemical indications are encouraging. A regolith has been mapped at the southern contact of this Sakami outlier, but attendant mineralization has yet to be found.

The last remaining of the four Sakami outliers where work has been carried out is Mildred Lake (P.E. 626). Very limited coverage of this area has not resulted in the discovery of mineralization, but a potential remains nonetheless. Units of Lower Sakami rocks (basal conglomerate, and siltstone) have been mapped, as have several structures which could serve as favourable environments for ore deposition.

7. INVESTIGATIONS

7.1 AIRBORNE SURVEY

7.1.1 Helicopterborne Spectrometer Survey

Survey Platform:	Jet Ranger 206B
Aircraft Operator:	Heli Voyageur, Val d'Or, Québec
Instrumentation:	Scintrex GAM 2S Spectrometer Scintrex GSA 64 crystal RCM-6 recorder
Data recorded:	Total count, U, Th, K channels
Time Constant:	1.0 sec.
Survey Personnel:	M. Leppin, J. Kaylor
Method of Survey:	Line flying at 500 m spacings; 100 km/hr airspeed; ground clearance ca. 30 m
Areas flown:	P.E. 627 400 km, P.E. 628 270 km, P.E. 634 1200 km, P.E. 635 300 km.
Helicopter time used:	24.5 hours
Operational base:	Dieter Lake Base Camp

7.1.2 Helicopter Geochemistry - Lake Centre and Margin Sediment Sampling

Aircraft:	Hughes 500C
Aircraft Operator:	Viking Helicopters, Ottawa
Survey Personnel:	S. Rivard, M. Beaulieu
Method of Survey:	One person navigated, the other sampled using a dart.
Areas Sampled; Time:	P.E. 627 1.0 hrs P.E. 628 1.0 hrs P.E. 634 11.3 hrs P.E. 635 6.4 hrs 19.7 hrs

7.1.3 Helicopter Mapping

Area	Helicopter Hours
P.E. 626	0
P.E. 627	0.67
P.E. 628	0.67
P.E. 634	12.0
P.E. 635	4.6
Reconnaissance	3.4
	21.25

7.2 CARBORNE SURVEY

Nothing to report.

7.3 GROUND SURVEY

7.3.1 Ground Prospecting

The following table shows the number of mandays spent per area. The method employed consisted of teams of two, each person equipped with a scintillometer. In areas of detailed work, where lines had been cut, blocks of 200 x 200 m were covered daily by one team. In permit areas, which did not have cut lines a team would cover approximately 2-4 km^2 daily.

Area	Mandays
P.E. 626	38
P.E. 627	28
P.E. 628	47
P.E. 635	34

7.3.2 Radon Survey

Water samples (ca. 100 m apart) taken from the margins of the following lake were tested for radon using an E.D.A. RD 200 portable detector

Lake	No. of Samples
Pons	43

Samples also analysed for radon were two bog water samples from Lac Pons.

7.3.3 Geological Mapping

Permits 626, 627, 628, 634 and 635 were mapped at a scale of 1:50,000. Emphasis was placed upon the rocks of the Sakami Formation, with much less time being spent in areas underlain by the Archean basement. In each instance, the outlining of the outlier was a priority, as was the attempt to define its stratigraphy.

Problems peculiar to each were encountered, but in the cases of P.E. 626 and P.E. 635, much of the areas expected to be underlain by Sakami rocks were covered by lakes or rivers. The mapping crew consisted in the permit areas of a junior geologist (sr. assistant) and a junior assistant.

Prior to the field season, two weeks were spent by a senior assistant in an airphoto interpretation of Permits 626, 627, 628 and 635.

7.3.4 Geochemical Survey

Area	Medium Sampled	No. of Samples	Method
P.E. 627	Centre-Lake Sediments	1	Helicopter
	Stream Sediments	4	Foot
P.E. 628	Centre-Lake Sediments	12	Helicopter
	Stream Sediments	22	Foot
P.E. 634	Centre-Lake Sediments	179(1/2.2 km^2)	Helicopter
	Stream Sediments	20	Foot
P.E. 635	Centre-Lake Sediments	44 (1/2.1 km^2)	Helicopter
	Lake Margin Sediments	12	Helicopter
	Lake Margin Waters	43	Helicopter
	Stream Sediments	24	Foot
	Soils	82	Foot
	Bog and Stream Waters	4	Foot

7.3.5 Sampling

Medium Sampled	Analytical Method	Elements	Number of Samples
Rock	semi-quantitative	32	2
Rock	DNA, XRF	U_3O_8, ThO_2	34

7.3.6 Other Surveys

Area	Survey
P.E. 635	EM 16R (Orientation)

7.4 TRENCHING

Nothing to report.

7.5 DRILLING

Nothing to report.

8. RESULTS

8.1 ANOMALIES DISCOVERED

8.1.1 Radiometric Anomalies

8.1.1.1 P.E. 627 Dieter Lake North

Of the eight anomalies returned for this area, only one actually falls within the permit (Map 4), the others being on ground held by a competitor. A ground check of the anomaly within the permit shows it to be a result of high background granites (three to four times the local background). This anomaly is not judged to be significant.

8.1.1.2 P.E. 628 Dieter Lake South

Four anomalies were obtained, two of which are beyond the permit limits; of which one is in open ground (Map 4). The three anomalies which were ground checked proved to be due to granites and granite boulders.

8.1.1.3 P.E. 634 Lac Gerzine

Thirty-two anomalies and two zones which had high background uranium values were interpreted for this area (Map 8). Most conspicuous is the group of nineteen anomalies located in the westernmost point of the permit. The majority of these (sixteen) fall within areas underlain by granites, indicating a high background are, which when checked on the ground resulted in SPP2 readings within the range of 1000-2500 c/s. Three of the remaining anomalies are caused by radioactivity within sedimentary rocks, and the last one falls close to the contact between the sediments and granites. Ground checking of anomaly 17A, situated

near the contact, showed counts of up to 800 c/s within the granites to be the cause. Anomaly 10A proved to be the most interesting as it was shown to be caused by green siliceous shales (5000 c/s) in outcrop located very near the unconformity. These shales are very fine-grained to aphanitic with less than 1% very fine-grained quartz grains. Associated with this are the typical lower Sakami assemblage of basal conglomerate, siltstones, red "wackes" and sandstone.

The balance of the anomalies are distributed throughout the permit and breakdown as follows: eight are within granitic terrain, and four in sediments. No grouping is evident, but the latter four do occur at a similar distance from the northern contact and may reflect a single horizon, but are no closer to one another than 2.5 km. Two of these anomalies were followed up and the lithologies were similar at each: white orthoquartzites interbedded with finely laminated red-orange siltstones. Values of up to 1200 c/s were obtained.

8.1.1.4 P.E. 635 Lac Pons

All of the sixteen anomalies obtained in this area were ground checked, with the result that fourteen were due to high background granitic terrain, while two were situated at the granite/sediment contact, one each at the north and south (Map 11). Anomaly 9A which is at the southern contact, was found to be due to two times above background (75 vs. 150 c/s) granites. The sandstones and regolith at this locale were not anomalously radioactive. Anomaly 4A was also due to radioactive granites, this time at the northern contact. Here local values of up to 15,000 c/s were recorded. The radioactivity is due to uranium found within a fracture of the hematized granites. Other local readings were as much as 5000 c/s. The Sakami sediments at this contact are not exposed.

8.1.2 Geochemical Anomalies/Chemical Analyses

8.1.2.1 P.E. 634 Lac Gerzine

Results from the centre lake sediment sampling are as follows:

Number of samples:	179 (1/2.1 km^2)	
Background:	< 8.6 ppm ($< \bar{x}$):	120 values (67%)
Third Order:	8.6-20.0 ($\bar{x}+\sigma$):	42 values (23.4%)
Second Order:	21.0-31.6 ($\bar{x}+2\sigma$):	7 values (4%)
First Order:	> 31.6 ($>\bar{x}+2\sigma$):	10 values (5.6%)

Most ovious about the anomalous values are the associations they display with the boundary of the Sakami outlier, while sample within the interior fall to background (Map 9). Anomalous values were obtained for both the north and south edges of the sedimentary belt, but the better values are found along the northern side, where they extend for most of its length. Direct correlation with radiometric anomalies could not be established. Of note, however is the western part of the permit, where a large cluster of radiometric anomalies situated primarily within the granites is marked by a number of third order geochemistry ratings. Such are common within the granites however.

8.1.2.2 P.E. 635 Lac Pons

Centre-Lake Sediments.

Results for this survey are as follows:

Number of samples:	44 (1/2.2 km^2)	
Background:	< 8.5 ppm ($< \bar{x}$):	32 values (73%)
Third Order:	8.6-11.6 ($\bar{x}+\sigma$):	4 values (9%)
Second Order:	11.7-30.7 ($\bar{x}+2\sigma$):	6 values (13.6%)
First Order:	> 30.7 ($> \bar{x}+2\sigma$):	2 values (4.4%)

A single cluster of six anomalous values is found at the northernmost point of the permit, within an area underlain by granitic rocks. They are not believed to be of any significance. The remaining values are distributed throughout the area, and do not indicate anomalous areas (Map 12).

Lake Margin Waters (Radon) - Lac Pons

Number of Samples:	41	
Background:	< 1.54 cpm ($< \bar{x}$):	28 values (68.3%)
Third Order:	1.54-4.12 ($\bar{x}+\sigma$):	3 values (7.3%)
Second Order:	4.13-6.69 ($\bar{x}+2\sigma$):	6 values (14.6%)
First Order:	> 6.69 ($> \bar{x}+2\sigma$) :	4 values (9.8%)

A significant grouping of anomalies occurs at the north end of Lac Pons, the same area in which uranium values were discovered within granites. As the values for the remainder of the lake fall to the level of background, an association between the cluster and the showing is obvious.

Soil Samples - Vicinity of CC showing

Number of samples:	82	
Background:	< 16.2 ppm ($< \bar{x}$):	53 values (64%)
Third Order:	16.2-38.4 ($\bar{x}+\sigma$):	7 values (8%)
Second Order:	38.5-60.8 ($\bar{x}+2\sigma$):	4 values (5%)
First Order:	> 60.8 ($> \bar{x}+2\sigma$):	19 values (23%)

Samples were taken within the B horizon where possible, on a 225 m x 225 m grid, with sample sites every 25 m. The grid was orientated such that the base line was parallel to and approximately over the Archean/Sakami contact. The ground sampled sloped southward over the granites towards the base line, where it became flat and in places swampy. This swamp was characterized by features associated with permafrost namely frost boils and heaving (palsas), and ice was encountered 50 to 100 cm below the surface.

The overall area covered by the survey is small, but several anomalous areas are readily evident (Map 13). Based on the limited outcrop available, the first order values fall generally near the contact between the granites and sediments while values in areas underlain by each are at background levels.

8.1.3 Other Anomalies

Nothing to report.

8.2 DESCRIPTION OF MINERALIZATION

8.2.1 P.E. 635 Lac Pons

A small occurrence of uranium mineralization was found within the basement granites. It exists along joints or fractures within a strongly hematized granite, which is cut by a pegmatite dyke. The hematite (var. specularite) occurs as stringers parallel to this dyke.

9. ASSESSMENT OF POTENTIAL

Present indications indicate both of the newly discovered Sakami outliers as favourable environments for the finding of uranium. P.E. 634, Lac Gerzine, has received only limited attention, but all expressions are very encouraging. Radioactivity has been found within several units of the Sakami across the entire area, a fact confirmed by both air and ground surveys.

P.E. 635, Lac Pons, is the first area in which mineralization has been encountered within the basement, albeit in a very localized concentrati

The proximity to the contact with the Sakami and the fact that this contact has not yet been evaluated due to overburden cover would place this area into a high priority target category. The form in which the uranium (estimated at ca. 1500 ppm eU after spectrometric testing) occurs would indicate a potential for epigenetic ore.

Regolith has been observed along the southern contact of this outlier in the order of five meters thick, but is without attendant mineralization or radioactivity.

The potential of the remaining Sakami outlier, that of Mildred Lake (P.E. 626), remains to be tested. Work carried out during 1978 was insufficient to outline possible mineralization, but mapping did show the outlier to extend further into the western half of the permit than was previously known. Several factors have precluded exploration in the area, these being its relative inaccessibility, great abundance of water cover, and a lack of manpower. It is felt that a reasonable potential does exist for this area, but this unknown value must be wieghed against the cost involved.

10. RECOMMENDATIONS

Based upon the results obtained from this past field season, the Sakami Formation is evidently an environment in which exploration should be continued.

APPENDIX A

GEOCHEMISTRY DATA

GAYOT LAKE

PROJECT No. 71-86

KEY FOR SOIL GEOCHEMISTRY SAMPLE DATA RECORDS

Topographic Position:

Top of Hill	1
Top of Slope	2
Halfway down slope	3
Flat Land	4

Horizon A

B

C

Grain Size:

Organic	1
Clay	2
Silt	3
Fine Sand	4
Coarse Sand	5

Vegetation:

Conifer	1
Alder	2
Caribou Moss	3
Scrub	4
Swamp	5

Organic Content:

Very High	1
High	2
Medium	3
Low/Nil	4

Colour:

White	1	Red	6
Buff	2	Brown	7
Yellow	3	Dark Brown	8
Orange	4	Black	9
Pink	5	Grey	10

GEOCHEMICAL SAMPLE DATA SHEET

- SOILS -

PROJECT : 71-86

SAMPLE #	AREA NTS MAP #	LINE	STATION	TOPOGRAPHIC POSITION	VEG.	HORIZON	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR315		L00W	1-00S	3	3	B	4	7	4	1.9				635	
316		L00W	0-75S	3	3	B	4	7	4	2.7				635	
317		L00W	0-50S	4	5	B	1	8	1	25.0				635	
318		L00W	0-25S	4	3	B	4	2	4	9.7				635	
319		L00W	0-00S	3	5	B	1	8	1	>2000				635	
320		L00W	0-25S	3	4	B	1	7	4	36.0				635	
321		L00W	0-50N	3	4	B	4	7	4-5	400.0				635	
322		L00W	0-75N	3	3	B	4	7	4-5	4.6				635	
323		L00W	1-00N	1	3	B	4	7	4.5	2.8				635	
324		L50E	1-00N	1	3	B	4	7	5	1.8				635	
325		L75E	1-00N	3	3	B	4	7	5	2.1				635	
326		L100E	1-00N	3	3	B	4	7	5	1.7				635	
327		L100E	0-75N	3	3	B	4	7	5	2.0				635	
328		L100E	0-50N	4	3	B	4	7	5	4.0				635	
329		L100E	0-25N	3	3	B	4	7	5	4.0				635	
330		L100E	0-00N	3	3	B	4	7	5	1.4				635	
331		L100E	0-25S	4	5	B	1	7	1	197.0				635	
333		L100E	0-50S	4	5	B	1	7	1	67.0				635	
334		L100E	0-75S	4	5	B	1	7	1	19.0				635	
335		-	-	-	-	-	-	-	-	1.3					low standard
336		L100E	1-00S	4	5	B	1	7	1	27.0				635	
337		L75E	1-00S	4	5	B	1	7	1	30.0				635	
338		L50E	0-75S	4	5	B	1	7	1	169.0				635	
339		L50E	0-50S	4	5	B	1	7	1	174.0				635	
340		L50E	0-25S	3	3	B	4	7	5	8.1				635	
341		L50E	BL00	4	4	B	4	10	5	5.7				635	
342		L50E	0-25N	4	4	B	1	9	1	124.0				635	
343		L50E	0-50N	3	3	B	3	8	1	3.8				635	
344		L50E	0-75N	3	3	B	4	5	5	1.0				635	
345		L75E	0-75N	3	3	B	3	8	1	2.6				635	
346		L75E	0-50N	3	3	B	4	8	5	1.0				635	
347		L75E	0-25N	3	3	B	4	8	5	1.8				635	
348		L75E	BL00	3	3	B	4	7	5	2.6				635	

GEOCHEMICAL SAMPLE DATA SHEET

- SOILS -

PROJECT: 71-86

SAMPLE #	AREA NTS MAP#	LINE	STATION	TOPOGRAPHIC POSITION	VEG.	HORIZON	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR349		L75E	0-25S	4	3	B	4	7	5	2.0				635	
350		L75E	0-50S	4	5	B	4	7	5	5.9				635	
351		L25E	0-25N	3	4	B	2	9	1	2700.				635	
352		L25E	0-50N	4	3	A	2	9	1	12.0				635	
353		L25E	0-75N	3	3	B	4	1	5	1.6				635	
354		L25W	1-00N	3	3	B	4	7	5	1.8				635	
355		L50W	1-00N	4	3	B	4	7	5	1.5				635	
356		-	-	-	-	-	-	-	-	1.2					Low standard
358		L100W	1-00N	4	1	B	4	7	5	5.2				635	
359		L75W	1-00N	4	5	B	4	7	5	12.2				635	
360		L100W	0-75N	4	1	B	4	9	1-5	141.0				635	
361		L100W	0-50N	4	1	A	1	9	1	215.0				635	
362		L100W	0-25N	4	1	B	4	8	5	13.3				635	
363		L100W	BL00	4	1	B	2	8	1-5	115.0				635	
364		L100W	0-75S	4	5	B	1	8	1	91.0				635	
365		L100W	0-50S	4	3	B	3	8	4	2.0				635	
367		L100W	0-75S	4	3	B	4	8	5	1.3				635	
368		L100W	1-00S	4	3	B	4	8	5	1.1				635	
369		L75W	1-00S	4	3	B	4	8	5	2.1				635	
370		L75W	0-75S	4	3	B	4	8	5	1.9				635	
371		L75W	0-50S	4	3	B	4	8	5	1.0				635	
372		L75W	0-25S	4	5	A	2	9	1	260.0				635	
373		L75W	BL00	4	5	A	1	9	1	62.0				635	
374		L75W	0-25N	4	1	A	4	10	5	30.0				635	
375		L75W	0-50N	3	1	B	4	8	5	31.0				635	
376		L75W	0-75N	3	1	B	4	8-9	5	80.0				635	
377		-	-	-	-	-	-	-	-	3.2					Low standard
378		L50W	0-50N	3	3	B	4	8	5	2.3				635	
379		L50W	0-75N	2	3	B	4	8	5	2.1				635	
380		L25W	0-75N	3	3	B	4	8	5	1.6				635	
381		L25W	0-50N	3	3	B	4	8	5	3.5				635	
382		L25W	0-25N	3	3	B	4	8	5	4.4				635	
383		L50W	0-25N	3	4	B	4	8	5	12.7				635	

GEOCHEMICAL SAMPLE DATA SHEET

- SOILS -

PROJECT : 71-86

SAMPLE #	AREA NTS MAP #	LINE	STATION	TOPOGRAPHIC POSITION	VEG.	HORIZON	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR384		L50W	BL00	4	4	B	4	8	5	15.5				635	
385		L50W	0-25S	4	5	B	1	9	1	620.0				635	
386		L50W	0-50S	4	5	B	2	9	1-5	55.0				635	
387		L50W	0-75S	4	3	B	4	8	5	1.7				635	
388		L25W	0-75S	4	3	B	4	8	5	1.7				635	
389		L25W	1-00S	3	3	B	4	8	5	2.8				635	
390		L50W	1-00S	3	3	B	4	8	5	0.8				635	

KEY FOR LAKE AND STREAM SEDIMENT SAMPLE DATA RECORDS

Type:
- Lake/Pond
  - Mineral Rich 1
  - Orgainc Rich 2
- Stream
  - Mineral Rich 3
  - Organic Rich 4
- Spring
  - Mineral Rich 5
  - Organic Rich 6
- Bog
  - Mineral Rich 7
  - Organic Rich 8

Size or Depth: Meters

Flow Rate:
- Stagment 1
- Slow 2
- Moderate 3
- Fast 4
- Torrent 5

Grain Size:
- Organic 1
- Clay 2
- Silt 3
- Fine Sand 4
- Coarse Sand 5

Organic Content: Estimate in %

Colours:

White	1	Red	6
Buff	2	Brown	7
Yellow	3	Dark Brown	8
Orange	4	Black	9
Pink	5	Grey	10

Comments:
- Lakeshore features
- Relief
- Possible contamination
- Sample Status

Project: 71-86

GEOCHEMICAL SAMPLE DATA SHEET

- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
SJMC-01				4	.5	2	60	8	3	11.0				635	Grass field
02				4	.5	3	40	8	3	30.0				635	
03				4	.5	2	30	8	4	15.0				635	Grass field
04				4	.25	4	30	8	3	25.0				635	Small stream flowing into a larger one; torrential with boulders on bottom
05				3	.25	3	1	7	4-5	1.5				635	Large boulders in stream; forest surroundings
06				3	.25	3	5	7	4	1.8				635	Forest
07				3	.5	4 to 5	20	8	3	8.8				635	Large stream (15 cm wide) ; forest
08				4	.05	2	30	8	3	19.5				635	Marsh
09				4	.05	2	30	8	2-3	3.2				635	Forest
10				4	.5	2	40	8	3	4.3				635	Swamp
11				4	.25	3	70	8	1-2	4.8				635	Swamp
12				4	.25	2	30	8	3	6.3				635	Swampy forest
13				4	.05	2	80	7	1-2	0.1				635	Swamp
14				4	.1	2	40	8	1-2	46.0				635?	Swamp
15				4	.25	2	50	8	1-2	18.5				635	Swamp
16				4	.25	2	50	8	1-2	4.6				635	Swamp
17				3	.25	2	1	7	4-5	5:3				635	Swamp
18				4	.05	2	30	9	2	100.0				635	Swamp
19				4	.5	3	40	8	3	10.8				635	Swamp
20				3	.05	2	20	8	4	0.2				635	Swamp
21				4	.5	3	20	9	3	8.5				635	Swamp
22				4	1	2	30	8	3	9.3				635	Forest
23				4	.25	3	30	8	3	20.5				635	Swamp
24				4	.05	2	30	8	3	1.0				635	Swamp
25				3	.25	2	40	8	3	5.7				627	Forest
26				4	.05	2	40	8	3	2.4				627	Swampy forest

GEOCHEMICAL SAMPLE DATA SHEET

- LAKE AND STREAM SEDIMENTS -

Project: 71-86

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8JMC-27				4	.25	2	20	8	3	4.2				627	Tag alders
28				3	.02	2	10	7	4+5	4.8				627	Marshy forest
29				4	.05	2	20	8	3	1.4				628	Swampy valley
30				4	.1	3	40	8	3	4.3				628	Scrubs
31				4	.25	4	80	8	1	6.5				628	Scrubs & forest
32		50W	44S	2	.75	1	80	7	1	6.5				635	Swamp
33		50W	38S	2	.75	1	90	7	1	18.8				635	
34		50W	14S	2	.25	1	40	8	3	510.0				635	
35		27W	BL	2	.1	1	10	9	3+4+5	170.0				635	
36		24W	BL	2	.1	1	10	9	3+4+5	111.0				635	
37		25W	4 S	2	.05	1	20	8	3	127.0				635	
38		25W	12S	2	.02	1	10	7+8	3+4+5	56.0				635	
39		25W	29S	2	.02	1	70	7	1+3	298.0				635	
40		25W	42S	2	.5	1	20	7	3	38.0				635	
41		25W	44S	2	.5	1	95	7	1	47.0				635	
42		25W	47S	2	.5	1	95	7	1	55.0				635	
43		25W	50S	2	.5	1	10	8	3	58.0				635	
44				4	1	2	1	7	4+5	1.3				628	Swampy forest
45				4	.5	2	20	8	2+3	2.2				628	Swampy forest
46				4	.1	3	30	7	2+3	3.1				628	Alders, valley
47				4	.1	2	30	9	3	11.8				628	Alders
48				4	.05	2	30	8	3	2.8				628	Forest
49				4	.03	2	10	7	3	2.3				628	Steep valley
50				3	.5	4	30	7	3	4.9				628	
51				4	1	3	50	7	3	8.7				628	
52				4	.03	2	30	9	3	18.0				628	
53				4	.05	2	60	8	3	2.9				628	
54				4	.5	2	30	8	2+3	1.0				628	
55				4	1	2	20	8	3	2.5				628	
56				4	.5	2	20	8	3	1.0				628	

GEOCHEMICAL SAMPLE DATA SHEET

Project: 71-86

- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8JMC-57				4	.25	2	40	8	3	3.6				628	
58				3	.5	2	20	8	3	12.0				628	
59				4	.05	2	40	8	3	5.2				628	
60				4	.5	2	40	8	3	1.8				628	
61				3	.05	4	20	8	2-3-4	5.2				628	
62				3-4						6.5				628	
8MB-57	LAC PONS			2	4		90	7	1	3.5				635	Lake Margin
59				1	3		30	7-10	3-4-5	0.7				635	" "
62				1	6		20	7-10	2-4-5	2.5				635	" "
64				1	4		20	3	3-4	2.5				635	" "
71				1	4		20	7	3-4	3.7				635	" "
72				1	3		10	7	4	1.7				635	" "
74				1	7		30	7-10	2-3	5.7				635	" "
89				1	3		05	7	4-5	1.2				635	" "
90				2	5		90	7	1	6.9				635	" "
94				2	2		90	7	1	6.2				635	" "
98				1	3		40	7-10	1-2	4.9				635	" "
100				2	2		85	8	1	3.7				635	" "

GEOCHEMICAL SAMPLE DATA SHEET

Project: 71-86

- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
6SR-01															
02															
03															
04															
05															5 no SP
06	23M			2	1			7	1	9.5				627	
07	23M			2	6.50			7	1	13.5				628	
08	23M			2	1			7G	1	5.9				628	
09	23M			2	2			7G	1	4.1				628	
10	23M			2	3			7G	1	2.5				628	
11	23M			2	1.25			7	1	1.1				628	
12	23M			2	6.50			7	1	14.2				628	
13	23M			1-2	3			10-7	4-1	5.9				628	
14	23M			2	2			7	1	18.9				628	
15	23M			2	3			7	1	13.7				626	
16	23M			2	2			7	1	10.0				628	
17															17 no SP
18	23M			2	5			7	1	9.7				628	
19	23M			2	8			7	1	7.7				628	
20	23M			2	6			10-7	1	4.3				635	
21										0.7					Low standard sample
22	23M			2	2			7	1	7.8				635	
23	23M			2	9			7	1	3.3				635	
24	23M			2	1			7	1	2.5				635	
25	23M			2	5			7	1	2.1				635	
26	23M			2	1.25			7	1	1.2				635	
27	23M			2	16			7	1	6.4				635	
28	23M			2	5			7	1	2.5				635	
29	23M			2	1.25			7	1	3.5				635	
30	23M			2	1.75			7	2	2.5				635	

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- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-31	23M			2	1.25			10-7	1	4.3				635	
32	23M			2	1.25			10-7	5-1	4.3				635	
33	23M			2	2			7	1	3.0				635	
34	23M			2	1.50			7	1	8.8				635	
35	23M			2	3			7	1	3.3				635	
36	23M			2	5			7-10	1-2	16.1				635	
37	23M			2	10			7	1	8.4				635	
38	23M			2	1.3			7	1	3.3				635	
39	23N			2	2			7	1	2.5				635	
40	23N			1	2.5			10	2	4.1				635	
41	23N			2	3			7	1	19.7				635	
42										0.4					Low standard sample
43	23M			1-2	10		80	7-10	1-2	10.6				635	
44	24D			2	2		99	7	1	3.7				635	
45	24D			2	1.2			7	1	3.0				635	
46	24C			2	2			7	1	7.4				635	
47	24C			1-2	12		60	7	1-3	15.6				635	
48	24C			1-2	13		50	10	1-3	12.1				635	
49	24C			2	5			7	1	3.2				635	
50	24C			2	3		80	7-10	1-2	33.0				635	
51	24C			2	1.5			7	1	3.3				635	
52	24C			2	1.5			7	1	1.4				635	
53	24C			2	7			7	1	6.1				635	
54	24C			2	2			7	1	3.9				635	
55	24C			2	4			7	1	7.9				635	
56	24C			2	1			7	1	5.5				635	
57	24C			2	1.2			7	1	66.0				635	
58	24C			2	1		70	7	4-1	10.8				635	
59	24C			2	1.2		80	7	1-4	10.8				635	
60	24C			2	2.5		80	7	1-4	11.8				635	

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- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-61	24C			2	8		95	7	1	17.0				635	
62	23M			2	1.2			7	1	2.8				635	
63										0.6					Low standard sample
64	24C			2	1		85	7	1	13.6				634	
65	24C			2	1		85	7	1	8.0				634	66 no SP
67	24C			1	1.5		80	7	1-4	19.5				634	
68	24D			2	3		50	10	2	19.3				634	
69	24D			1	5		20	7-10	2	18.5				634	
70	24C			2	1		80	7	1-4	6.3				634	
71															71 no SP
72	24C			1	5		20	10	2	4.5				634	
73	24C			2	2		80	7	1	8.5				634	
74	24C			2	0		100	7	1	6.0				634	
75	24C			2	1		80	8	1-5	2.7				634	
76	24C			1	1		40	7	1-4	1.8				634	
77	24C			2	7		90	7	1	19.6				634	
78	24C			1	1		60	7	4-5	3.0				634	
79	24C			2	1		40	7	1	17.6				634	
80	24C			1	1		25	7	2	13.7				634	
81	24C			2	3		80	7	1	15.5				634	
82	24C			2	1			7	1	2.0				634	
83	24C			2	8			7	1	525.0				634	
84	24C									4.2					Low standard sample
85	24C			2	0		100	8	1	31.0				634	
86	24C			2	1			7	1	11.0					
87	24C			2	3		80	7	1	5.6				634	
88	24C			2	2.5		85	7	1-5	8.5				634	
89	24C			2	1		85	7	1	6.2				634	
90	24C			2	2			7	1	6.1				634	
91	24C			2	2			7	1	4.3				634	

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- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-92	24C			2	6		85	7	1-3	5.9				634	
93	24C			2	3		95	7	1	10.6				634	
94	24C			2	1.5		100	7	1	4.3				634	
95	24C			2	1			7	1	1.0				634	
96	24C			2	3		100	7	1	1.9				634	
97	24C			2	3		80	7	1	19.6				634	
98	24C			2	3		100	7	1	17.9				634	
99	24C			2-1	1		75	8	1-4	1.2				634	
100	24C			2	2.5		90	8	1	7.4				634	
101	24C			1	1.5		40	10	2	7.7				634	
102	24C			2	1.5		90	7	1	18.3				634	
103	24C			2	6			7	1	35.0				634	
104	24C			1-2	13		80	7	1-2	25.0				634	
105										0.7					Low standard sample
106	24C			2	1		80	7	1	12.4				634	
107	24C			1	4		20	10	3	3.3				634	
108	24C			2	4		90	7	1	10.6				634	
109	24C			2	1.5		80	7	4-1	13.0				634	
110	24C			2	1.5		100	7	1	2.6				634	
111	24C			2	4		95	7	1	13.9				634	
112	24C			2	2		60	7	3-2	200.0				634	
113	24C			2	3			8-9	1	570.0				634	
114	24C			2	5		90	8-9	1	60.0				634	
115	24C			2	4			7	1	15.0				634	
116	24C			2	2		90	7	1	12.3				634	
117	24C			2	3		90	7	1	2.4				634	
118	24C			2	1			7	1	1.0				634	
119	24C			1-2	1.5		80	7-10	1-2	9.7				634	
120	24C			2	1		100	8	1	1.8				634	
121	24C			2	1.5		100	7	1	5.8				634	

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- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-122	24C			2	1		100	8	1	1.8				634	
123	24C			1	1		30	10	2	19.6				634	
124	24C			1	4		30	10	2	40.0				634	
125	24C			2	0.5		30	7-10	1-2	2.4				634	
126										0.4					High standard sample
127	24C			1	0.5		20	8	8-1	36.0				634	
128	24C			2	2.5		20	8	1	1.8				634	
129	24C			2	4			8	1	1.2				634	
130	24C			1	1.2		30	8	5	6.1				634	
131	24C			2	2		95	7	1	2.3				634	
132	24C			1	0.2		20	10	2	3.7				634	
133	24C			2	1.5		90	7	1	11.6				634	
134	24C			2	6		80	7	1	9.8				634	
135	24C			2	2		80	8	1	1.4				634	
136	24C			2	0.5		100	8	1	1.5				634	
137	24C			2	1		100	8	1	2.1				634	
138	24C			2	2			8	1	16.0				634	
139	24C			2	1			7	1	16.8				634	
140	24C			1	14		40	7	2-3	11.0				634	
141	24C			2	1.2		100	8	1	3.2				634	
142	24C			1	9		60	8-6	1-2	16.1				634	
143	24C			1	0.5		30	8	2-5	0.8				634	
144	24C			1	5		30	8	2	2.8				634	
145	24C			2	1		60	8	1-5	1.1				634	
146	24C			1	1		10	7-10	2-5	2.3				634	
147										0.9					Low standard sample
148	24C			2	1.5		90	7	1	2.2				634	
149	24C			1	0.5		20	8	2-5	0.6				634	
150	24C			2	40		98	1	1	3.3				634	
151	24C			2	0.2		60	8	1-5	2.5				634	

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- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-152	24C			2	2		80	7	1	100.0				634	
153	24C			1	2		40	7	2	7.9				634	
154	24C			1	3		30	7	2	6.2				634	
155	24C			2	1		80	8	1	2.3				634	
156	24C			2	2		95	8	1	0.7				634	
157	24C			1	12		30	7	2-3	7.8				634	
158	24C			2	0.3		100	8	1	1.7				634	
159	24C			1	0.5		10	7	2	3.2				634	
160	24C			1	1.5		10	7	2	3.7				634	
161	24C			2	1.5		60	7	1-2	1.2				634	
162	24C			2	5		60	7	1	4.4				634	
163	24C			2	1		80	7	1	18.3				634	
164	24C			2	5		90	7	1	31.0				634	
165	24C			2	5		80	7	1	24.0				634	
166	24C			2	1		90	7	1	3.0				634	
167	24C			2	6			7	1	35.0				634	
168										0.7					Low standard sample
169	24C			2	9		90	7	1-2	24.0				634	
170	24C			2	1		80	8	1	19.6				634	
171	24C			2	1		100	8	1	3.3				634	
172	24C			2	1			2-7	1	4.7				634	
173	24C			2	1		100	8	1	1.3				634	
174	24C			2	1.5		100	8	1	1.3				634	
175	24C			2	1.5		95	8	1	2.3				634	
176	24C			2	1		60	9	1-5	0.7				634	
177	24C			2	2		90	8	1	4.5				634	
178	24C			2	2			8	1	3.5				634	
179	24C			2	2		100	7	1	3.1				634	
180	24C			2	0.5		95	8	1	5.3				634	
181	24C			2	0.5		90	8	1	3.3				634	

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- LAKE AND STREAM SEDIMENTS -

SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-182	24C			2	2		95	8	1	2.5				634	
183	24C			1	1		40	10	2	13.0				634	
184	24C			2	3		60	10	1-2	30.0				634	
185	24C			2	3		80	7	1	7.8				634	
186	24C			2	0.5		95	8	1	2.7				634	
187	24C			2	8		95	7	1	31.0				634	
188	24C			2	4		100	7	1	6.9				634	
189	24C									50.0					Low standard sample
190	24C			2	3		100	8	1	6.6				634	
191	24C			2	3		100	7	1	10.1				634	
192	24C			1	10		100	10	2	6.4				634	
193	24C			2	1.5		100	8	1	1.3				634	
194	24C			2	2		100	8	1	2.8				634	
195	24C			2	4		80	7	1	4.9				634	
196	24C			2	0.2		100	8	1	0.4				634	
197	24C			2	1		90	7	1	8.4				634	
198	24C			2	3		90	7	1	5.8				634	
199	24C			2	0.5		100	8	1	13.3				634	
200	24C			2	4		70	7	1-2	5.2				634	
201	24C			1	7		40	10	2-3	8,8				634	
202	24C			2	1		100	8	1	0.6				634	
203	24C			1	4		80	10	2	4.8				634	
204	24C			1	0.5		30	7-10	3-4-5	3.3				634	
205	24C			2	1		60	7-10	1-5-3	3.0				634	
206	24C			2	3		80	7	1	2.5				634	
207	24C			2	0.1		100	8	1	5.5				634	
208	24C			1	0.5		40	7-10	5-3	1.4				634	
209	24C			2	1		80	9	1-5	5.9				634	
210										1.7					Low standard sample
211	24C			1	2		20	10	2-5	0.4				634	

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SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-212	24C			1	6		20	10	2-5	6.6				634	
213	24C			2	2		100	8	1	1.4				634	
214	24C			1	6		40	10	2-1	6.1				634	
215	24C			2	2		100	8	1	3.9				634	
216	24C			1	9		20	10-6	2	10.5				634	
217	24C			2	10		80	7	1-3	3.5				634	
218	24C			1	4		40	10	1-2	2.0				634	
219	24C			1	2.2		20	10	2-3	10.3				634	
220	24C			2	4		100	8	1	1.3				634	
221	24C			2	1		100	7	1	1.7				634	
222	24C			1	1		30	9	5-1	17.2				634	
223	24C			2	1		100	8	1	0.7				634	
224	24C			2	5		80	9	1-3	30.0				634	
225	24C			2	1.5		65	7	1-2	9.0				634	
226	24C			1	1.3		20	10	2-5	2.8				634	
227	24C			1	1		10	10	1-5	2.8				634	
228	24C			1	10		45	10	1-2	16.3				634	
229	24C			2	1.2		80	7	1	1.2				634	
230	24C			2	2		80	7	1-2	1.4				634	
231										0.2					Low standard sample
232	24C			2	2.5		90	8	1	2.3				634	
233	24C			2	1.5		90	8	1	3.0				634	
234	24C			2	2		100	8	1	1.8				634	
235	24C			2	1.5		100	8	1	0.4				634	
236	24C			1	1		40	8	5-1	1.2				634	
237	24C			2	2.5		100	7	1	1.4				634	
238	24C			2	3		100	7	1	1.1				634	
239	24C			2	4		80	7	1	0.7				634	
240	24C			1	1		30	8-9	5-1	20.0				634	
241	24C			2	2		70	7	1-4	9.4				634	

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SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-242	24C			2	8		80	7	1-2	9.3				634	
243	24C			1	1.5		05	10	4-5	5.2				634	
244	24C			2	8		80	8	1-2	15.5				634	
245	24C			2	2		100	8	1	1.1				634	
246	24C			1	3.5		45	7	1-3	4.3				634	
247	24C			2	1.5		95	8	1	0.8				634	
248	24C			2	2		95	8	1	0.5				634	
249	24C			2	8		80	7	1	1.7				634	
250	24C			2	28		80	7	1	3.0				634	
251	24C			2	6		90	7	1	1.7				634	
252										65.0					High standard sample
253	24C			2	5		80	7	1-2	3.1				634	
254	24C			2	4		80	7	1	5.6				634	
255	23M			2	0.5		100	8	1	0.9				DL	
256	23M			1	1		20	8	4-5	4.8				DL	
257				4	0.2	2		8	1	4.1				635	
258				4	0.2	2		8	1	3.0				634	
259				4	0.1	2		8	1	3.4				634	
260				4	0.1	2		8	1	2.0				634	
261				4	0.1	2		8	1	0.9				634	
262				4	0.1	2		8	1	1.6				634	
263				3	0.1	3		7	4	3.4				634	
264				4	0.1	2		8	1	12.2				634	
266				4	0.2	1		7	1	1.9				634	
267				3	0.5	2		10	2	2.0				634	
311				4	0.1	4		8	1	5.6				634	
312				4	0.05	3		8	1	5.7				634	
313				4	0.1	2		2	4	2.0				635	
314				4	0.1	3		8	1	3.0				634	
332				3	0.1	2	0	7	5	220.0				634	L25E - 1+00S

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SAMPLE#	AREA NTS MAP#	LINE	STA-TION	TYPE	WIDTH/ DEPTH (m)	FLOW RATE	ORGANIC CONTENT %	COLOUR	GRAIN SIZE	U ppm				PERMIT NO.	COMMENTS
8SR-357				4	0.1	1	90	8	1	78.0				635	L75W - 1+00N
366				4	0.05	2	95	8	1	81.0				635	L100W- 0+50S
391				4	0.1	2	90	8	1	5.6				635	
392				4	0.05	4	60	8	1-5	19.5				635	
394				3	0.05	2	10	7	4-5	34.0				635	
395				3	0.05	4	15	7	4-5	7.9				635	
396				3	0.05	3	10	7	4-5	2.6				635	
397				4	0.1	3	90	8	1	5.7				635	
398				3	0.05	3	0	5	2	2.3				635	
399				4	0.1	2	100	9	1	8.2				635	
400				4	0.1	2	90	8	1	2.3				635	
401				4	0.1	2	90	9	1	2.6				635	
402				3	0.2	2	30	8	4	5.1				635	
403				3	0.5	5	25	8	4-5	3.8				635	
404				4	0.1	2	90	9	1	3.1				635	
405				4	0.1	2	80	8	1-4	1.9				635	
406				4	0.1	3	100	8	1	1.1				635	
407				4	0.1	2	90	8	1	2.1				635	
408				4	0.05	5	100	8	1	3.2				635	
409				4	0.05	3	100	8	1	1.7				635	
410				3	0.05	3	10	8	5	4.8				635	
411										0.1					Low standard sample
412				4	0.1	4	90	8	1	3.3				635	
413				4	0.1	5	100	8	1	3.5				635	